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In the Bulletin Amer. Mus. Nat. Hist. (XXIII, 1907), Mr. L. Hussakof describes a fossil surgeon-fish from Antigua Island, West Indies, in rocks supposed to be of Eocene Age. The species, represented by a very complete skeleton is named *Zebrasoma deani*. This species is the first of the family of Hepatidae (Teuthidae) found in America, and it is the only fossil species of the genus *Zebrasoma*. The pertinence of the species to the living genus *Zebrasoma* may be questioned. The first dorsal spine is the longest and seems semi-detached. In *Zebrasoma* the first is much shorter than the others. The soft fins in *Zebrasoma* are very high. In *Z. deani*, they are quite low. The caudal peduncle is slenderer in *Z. deani* and the tail much more widely forked than in any species of *Zebrasoma*. The number of vertebra ( $8 + 11 = 19$ ) is fewer than in living Hepatidae (22). The caudal spine possibly existed, but if so, it is lost in this specimen.

If the fish is to be referred to an existing genus, *Callicanthus* with a slender tail and a widely forked fin, with the first of the five dorsal spines enlarged and with the vertical fins low, is nearer to the species than is *Zebrasoma*. The profile in *Callicanthus* is curved while in *Z. deani*, it is very straight.

In the Bulletin de la Soci  t   Belge de Geologie (XXI, 1907), Dr. Louis Dollo endeavors to show that the ptyctodont fishes, supposed to be fossil chimaeroids, really belong to the order of Arthrodires. He further concludes that the chimaeras are specialized cochliodonts, changed through the necessities of deep sea life and a food of mollusks. Dr. Dollo further adds that "the idea of the Irreversibility of Evolution which has led me to the conclusions I have just justified, has once more shown its utility, else one would be led to maintain that specialized organisms might become in the process of descent again primitive, in order to become again specialized in the same or in different direction."

DAVID STARR JORDAN.

**Notes on the Structure of Insects.**—*A Study of the Common House-Fly.*<sup>1</sup>—That one need not search far for profitable objects of research is evidenced by the mass of interesting material presented by Mr. C. H. Hewitt's studies of the common house-fly, *Musca domestica*. In the first of a series of three papers dealing with the anatomy, develop-

<sup>1</sup> Hewitt, C. G. The structure, development, and bionomics of the house-fly, *Musca domestica*. Part 1.—The anatomy of the fly. *Quar. Journ. Micr. Sci.*, 1907, li, pp. 395–448, pls. 22–26.

ment, and bionomics of the species, is considered especially the anatomy of the adult.

Various species are popularly confused with *M. domestica* and the author therefore discusses the characters by which this — the true “house-fly” — may be distinguished. External anatomy is then considered and an attempt is made to homologize the various sclerites with those already recognized in the simpler orders of insects. Most of the terms introduced by Lowne are discarded and a number of inaccuracies in his descriptions are corrected. In the discussion of the wing veins the Comstock-Needham nomenclature is adopted since, “on account of its great morphological value it will no doubt in course of time replace the present confused system.” By an oversight the free parts of  $M_3$  and of  $Cu_2$  are referred to as the medio-cubital and the cubito-anal cross-veins respectively.

Macroscopic features of the internal structure are described in detail, though there is little discussion of the histological features. Especially detailed are the accounts of the tracheal system, and of the musculature. The four double plates illustrating the anatomy are well executed, but the plate illustrating the imago of *Musca domestica* and related species is too highly colored.

*The Segmentation of the Insect Head.*—Holmgren<sup>1</sup> discusses the moot question as to the number of segments in the head of the dipterous larva. In opposition to Bengtsson '97 and '05, he maintains that the suboesophageal ganglion includes but three segments. In support of his contention that the endolabium represents a separate segment, Bengtsson has cited; 1, — an independent innervation from the suboesophageal ganglia and certain suggestive structural relations of this part; 2, — the development; and 3, — comparison with other forms.

Holmgren shows that the so-called endolabial nerves of Bengtsson are muscles, as is most clearly brought out in thin sections treated with iron-haematoxylin. The slight elevation which was supposed to represent a distinct ganglion in the sub-oesophageal complex is caused by the contraction of the muscles. Postembryonic development cannot decide the question, for the presence of a fourth pair of imaginal discs with peripodal cavities does not prove that these are homodynamous with legs, and therefore with the mouth parts (cf. origin of eyes or wings).

Finally, Holmgren maintains that evidence drawn from Folsom's

<sup>1</sup> Holmgren, N. Zur Morphologie des Insektenkopfes. *Zool. Anz.*, 1907, Bd. xxxii, pp. 73–97.

discovery of a fourth segment in the suboesophageal ganglion of Anurida is entirely useless since the endolabium of Phalacroceras larva is not homologous with the paraglossae of the Thysanura.

*The Habits and Structure of a Myriapod.*—S. R. Williams<sup>1</sup> presents many new observations on the habits and structure of the interesting myriapod, *Scutigera immaculata*. Its distribution, environment, light and water relations, and food habits are discussed. Experimental evidence favors the conclusion that the species is carnivorous. There is also presented considerable data regarding the eggs and the larvae. The newly-hatched larva has seven pairs of legs while the adult has twelve pairs. The author regards it as a highly specialized young, rather than a generalized ancestral form such as the hexapod larva of other diplopods is considered to be.

*Musical Organs of the Cicadidae.*—Among the most remarkable and effective voice-organs of the entire animal kingdom are the “drums” at the base of the abdomen of the males of the “seventeen-year locust” and their relatives in the family Cicadidae. It would seem that for these insects any other musical apparatus would be superfluous but Jacobi,<sup>2</sup> '07, reports finding in the cicadid genus *Tettigades*, from Chili, stridulating organs very similar to those already reported for certain beetles, ants, and other forms. They consist of a pair of oval, roughened file-like areas on the dorsal part of the prothorax, just within and caudad of the bases of the front wings. On the caudal angle of each front wing is a thickened flap which serves as a scraper. Unlike the abdominal musical organs these stridulating organs are equally developed in both sexes.

W. A. RILEY.

**British Rhizopods.**<sup>3</sup>—No group of organisms affords quicker or more satisfactory returns to the amateur microscopist than do the fresh water Rhizopoda, and few offer to the specialist greater opportunities for experimentation and investigation or more puzzling problems in the determination of species and the tracing of life histories.

<sup>1</sup> Williams, S. R. Habits and structure of *Scutigera immaculata*. *Proc. Bost. Soc. Nat. Hist.*, 1907, xxxiii, pp. 461–485, pl. 36–38.

<sup>2</sup> Jacobi, A. Ein Schrillapparat bei Singecaden. *Zool. Anz.*, 1907, xxxii, pp. 67–70.

<sup>3</sup> The British Freshwater Rhizopoda and Heliozoa. By James Cash and John Hopkinson. Vol. I. Rhizopoda. Part I. 150 pp. 16 Plates. London 1905.